

What is claimed is:

Claim 1: An assay for detecting a single nucleotide polymorphism in an organism comprising:

amplifying a 30 to 90 base pair nucleic acid molecule of an organism using a hairpin shaped primer that discriminates between different alleles by situating its 3' nucleotide at the location of a single nucleotide polymorphism; and

measuring threshold cycle or amplification efficiency or amount of amplified product wherein a lower amplification efficiency or delayed threshold cycle or a difference in the amount of amplified product is indicative of a mismatch between the primer and the organism and a single nucleotide polymorphism in the organism.

Claim 2: The assay of claim 1 wherein the nucleic acid sequence of the organism is amplified by PCR.

Claim 3: The assay of claim 2 wherein the PCR performed is real-time PCR.

Claim 4: The assay of claim 2 wherein amplicon production is measured at the completion of the PCR reaction.

Claim 5: The assay of claim 1 wherein the hairpin shaped primer comprises DNA.

Claim 6: The assay of claim 1 wherein the hairpin shaped primer comprises RNA.

Claim 7: The assay of claim 1 wherein the hairpin shaped primer comprises PNA.

Claim 8: An assay kit for detecting a single nucleotide polymorphism in an organism comprising a hairpin shaped primer for amplifying a 30 to 90 base pair nucleic acid molecule, wherein the hairpin shaped primer discriminates between different alleles by situating its 3'

nucleotide at the location of a single nucleotide polymorphism.

Claim 9: The assay kit of claim 8 wherein the hairpin shaped primer comprises DNA.

Claim 10: The assay kit of claim 8 wherein the hairpin shaped primer comprises RNA.

Claim 11: The assay kit of claim 8 wherein the hairpin shaped primer comprises PNA.